

Listing of Claims:

1. (currently amended) A method comprising:

generating a histogram of bitrate as a function of time for each of a plurality of previously-encoded multimedia programs, each bitrate histogram indicating actual bitrate requirements for every given point of time within the associated multimedia program;

prior to transmitting one of the plurality of media programs to a multimedia node, identifying [[a]] the previously-generated histogram of bitrate as a function of time associated with bitrate histogram for said a previously-encoded multimedia program to be transmitted to a multimedia node; and

during transmission of said multimedia program, changing a bandwidth allocation for the multimedia node in anticipation of an actual future bitrate spike indicated in the bitrate histogram for said multimedia program.

2. (previously presented) The method as in claim 1 wherein identifying comprises:

locating said bitrate histogram in a database of previously-generated bitrate histograms using multimedia content identification data.

3. (previously presented) The method as in claim 2 wherein said identification data is a serial number associated with said multimedia program.

4. (previously presented) The method as in claim 2 wherein said identification data is a checksum of a known unique portion of said multimedia program.

5. (original) The method as in claim 2 wherein said database is maintained on a remote server.

6. (previously presented) The method as in claim 1 further comprising:
filling an input buffer at said multimedia node by a particular amount in anticipation of the future bitrate spike indicated in said bitrate histogram.

7. (previously presented) The method as in claim 6 wherein filling said input buffer comprises increasing a transmission bitrate of the multimedia program to a second, higher bitrate.

8. (currently amended) A method for providing efficient bandwidth allocation on a bandwidth-limited network comprising:

generating a template of bitrate as a function of time for each of a plurality of previously-encoded multimedia programs, each bitrate template indicating actual bitrate requirements for every given point of time within the associated multimedia program;

receiving a request for a one of the plurality of previously-encoded multimedia programs from a first multimedia node;

allocating a first amount of bandwidth to supply said multimedia program to said multimedia node; and

dynamically adjusting said first amount of bandwidth based on the a previously-generated bitrate template for said multimedia program of bitrate data as a function of time indicating changes in bitrate requirements of said multimedia program, wherein said adjusting is done prior to the occurrence of actual said changes in bitrate requirements for said multimedia program indicated by the bitrate template.

9. (previously presented) The method as in claim 8 wherein said template of bitrate data as a function of time is retrieved from a template database.

10. (previously presented) The method as in claim 9 wherein said template of bitrate data as a function of time is identified in said template database using identification data associated with said multimedia program.

11. (previously presented) The method as in claim 10 wherein said identification data is a serial number associated with said multimedia program.

12. (previously presented) The method as in claim 8 further comprising:
dynamically adjusting said first amount of bandwidth based on a template of bitrate data as a function of time indicating changes in bitrate requirements of a multimedia program requested by a second multimedia node.

13. (previously presented) The method as in claim 8 wherein said multimedia program is a digital video disk ("DVD").

14. (previously presented) The method as in claim 8 wherein said first amount of bandwidth is dynamically adjusted upward to fill a buffer at said first multimedia node by a particular amount in anticipation of an increase in bitrate requirements for said multimedia program.

15. (previously presented) The method as in claim 12 wherein said first amount of bandwidth is dynamically adjusted upward to fill a buffer at said first multimedia node by a particular amount in anticipation of an increase in bitrate requirements for the multimedia program transmitted to said second multimedia node.

16. (previously presented) The method as in claim 8 wherein said first amount of bandwidth is maintained until a buffer at said first multimedia node is filled with at least a portion of said multimedia program.

17. (original) The method as in claim 16 wherein said first amount of bandwidth is maintained until another multimedia node requires additional bandwidth.

18. (currently amended) A system comprising:

a home media server configured to generate a histogram of bitrate as a function of time for each of a plurality of previously-encoded multimedia programs, each bitrate histogram indicating actual bitrate requirements for every given point of time within the associated multimedia program; wherein the media server is further to allocate a first amount of bandwidth to supply one of the a previously encoded multimedia programs to a first multimedia node and to dynamically adjust said first amount of bandwidth based on the previously-generated bitrate histogram a histogram of bitrate data as a function of time indicating changes in bitrate requirements of the multimedia program over time, wherein the first amount of bandwidth is dynamically adjusted prior to the occurrence of said actual changes in bitrate requirements for said multimedia program indicated by the bitrate histogram.

19. (previously presented) The system as in claim 18 wherein said home media server retrieves said histogram based on identification data associated with said multimedia program.

20. (previously presented) The system as in claim 19 wherein said identification data is a serial number associated with said multimedia program.

21. (previously presented) The system as in claim 18 wherein said home media server is further configured to:

dynamically adjust said first amount of bandwidth based on a histogram of bitrate data indicating changes in bitrate requirements of a multimedia program requested by a second multimedia node.

22. (original) The system as in claim 18 wherein said multimedia content is a digital video disk ("DVD").

23. (previously presented) The system as in claim 18 wherein said home media server is further configured to dynamically adjust said first amount of bandwidth upward to fill a buffer at said first multimedia node by a particular amount in anticipation of an increase in bitrate requirements for said multimedia program.

24. (previously presented) The system as in claim 18 wherein said home media server is further configured to dynamically adjust said first amount of bandwidth upward to fill a buffer at said first multimedia node by a particular amount in anticipation of an increase in bitrate requirements for a multimedia program transmitted to a second multimedia node.

25. (previously presented) The system as in claim 18 wherein said home media server is further configured to maintain said first amount of bandwidth until a buffer at said first multimedia node is filled with at least a portion of said multimedia program.

26. (original) The system as in claim 18 wherein said home media server is further configured to maintain said first amount of bandwidth until another multimedia node requires additional bandwidth.

27. (currently amended) A method comprising:

generating a histogram of bitrate as a function of time for each of a plurality of previously-encoded multimedia programs, each bitrate histogram indicating actual bitrate requirements for every given point of time within the associated multimedia program;

identifying a previously-generated bitrate histogram associated with a particular previously-encoded multimedia program to be transmitted to a multimedia node; and

delaying a start time for the multimedia program on the multimedia node for a particular period in anticipation of an actual future bitrate spike in the future indicated in the bitrate histogram.

28. (previously presented) The method of claim 27, wherein delaying comprises pre-buffering a particular amount of the multimedia program at the multimedia node in order to accommodate the future bitrate spike without interruption of the multimedia program.

29. (currently amended) A method for providing efficient bandwidth allocation on a bandwidth-limited network comprising:

: storing a histogram of bitrate as a function of time for each of a plurality of previously-encoded multimedia programs, each bitrate histogram indicating bitrate requirements at every given point of time within the associated multimedia program;

receiving a request for a first multimedia program from a first multimedia node;

identifying a first stored bitrate histogram associated with the first multimedia program;

allocating a particular amount of bandwidth to supply the first multimedia program to the first multimedia node based on the first bitrate histogram;

identifying a second stored bitrate histogram associated with a second multimedia program to be transmitted to a second multimedia node, the second bitrate histogram indicating an actual future spike in bandwidth requirements for the second multimedia program that will occur in the future during transmission; and

throttling back the bandwidth allocated to the first multimedia program just prior to encountering the bandwidth spike associated with the second multimedia program at a time sufficient to fill a buffer of the first multimedia node.

30. (currently amended) A method comprising:

generating a histogram of bitrate as a function of time for an entire media program before a transmission thereof to a multimedia node, the bitrate histogram indicating bitrate requirements at every given point of time within the associated media program;

allocating a first amount of network bandwidth for transmitting the media program to the multimedia node, the first amount being a subset of available network bandwidth to the multimedia node;

identifying, during transmission of the multimedia program, an actual upcoming bitrate spike within the bitrate histogram for the multimedia program, the actual bitrate spike temporarily requiring more than the available network bandwidth for transmission of the multimedia program; and

temporarily increasing the bandwidth allocation for the multimedia node from the first amount to a second amount in anticipation of the actual future bitrate spike indicated in the bitrate histogram, the temporarily increased bandwidth allocation being sufficient to fill a buffer at the multimedia node to avoid a buffer underrun at the multimedia node during the actual future bitrate spike.

31. (previously presented) The method of claim 30, further comprising:
restoring the bandwidth allocation to the first amount following the bitrate spike.